

Highlights in Cardiology ***Rome (Italy), February 01-03, 2017*** ***Highlights***

Introduction



Prof. Fedele, chairman of the symposium, opened the congress, by highlighting the high scientific level of this meeting running in the Sapienza University, the biggest one in Europe. This congress was a very unique occasion for a full update in Cardiology from any point of view, starting from epidemiology through, pathophysiology, clinic, diagnosis, prognosis and therapy of the major cardiovascular diseases, thanks to the participation of some of the most distinguished researches in cardiology. This symposium was also attended by more than 200 cardiologists and young physicians coming from Italy and other countries.

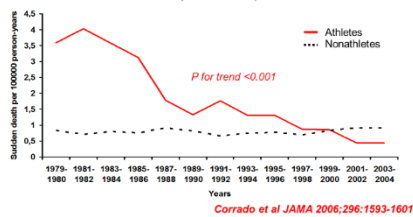
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Sudden cardiac death in the athlete

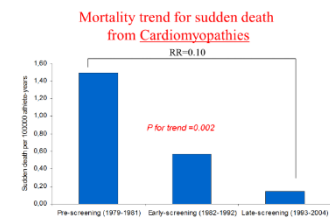
Annual Incidence Rates of Sudden Cardiovascular Death in Screened Competitive Athletes and Unscreened Nonathletes Aged 12 to 35 Years in the Veneto Region of Italy (1979-2004)



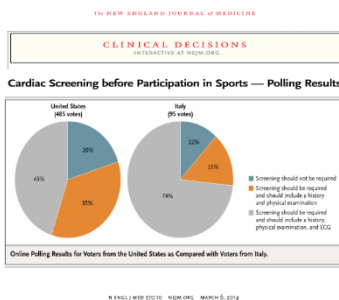
Corrado et al JAMA 2006;296:1593-1601

Prof. Corrado from Padua (IT), spoke about sudden cardiac death in the athlete. The speaker went deeper in his talk, by presenting very interesting and impressive data about the prevalence of sudden cardiac death (SCD) in young athletes less than 35 years old. Prof. Corrado pointed out that hypertrophic cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy are the main causes of sudden

death associated with sports in young athletes. In the main part of his presentation the speaker talked about the diagnostic methods available for the screening of these people, the prevalence, the incidence and the mortality trend based on the screening procedures. The speaker presented also very interesting data on polling results from US physicians compared to Italian physicians, by highlighting the main differences. In conclusion, the speaker pointed out that the preparticipation ECG and the early defibrillation must be used synergically in order to combine primary and secondary prevention of SCD in young athletes during sports.



Corrado et al JAMA 2006;296:1593-1601



N ENGL J MED 2010; 362:0804 MARCH 5, 2014

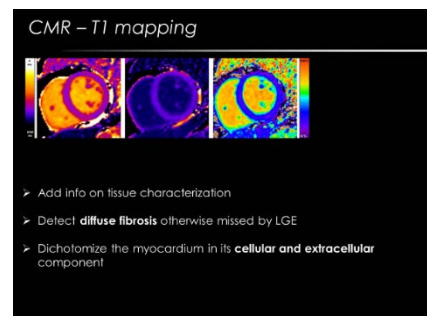
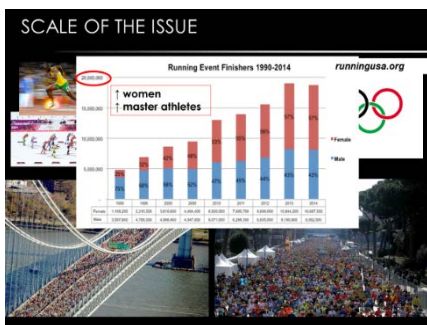
- How to prevent SCD beyond the pre-participation screening?
- What's about the so called "iron channel disorders" in young athletes?
- What's about the polling results of the cardiac screening before participation in sports presented by the speaker?
- What are the best cardiac screening procedures before any participation in sports from the speaker point of view?
- What is the mortality trend for sudden cardiac death due to cardiomyopathies presented by the speaker?
- What are the annual incidence rates of SCD in screened competitive athletes and unscreened nonathletes aged 12 to 35 years in the Veneto Region of Italy?
- What is the prevalence of HCM in young white people?

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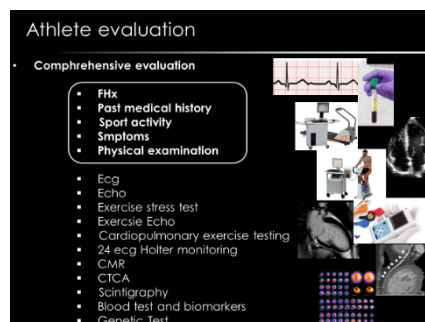
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Role of exercise tests, provocative tests and cardiovascular imaging.



The role of exercise and provocative tests and cardiovascular imaging, was the topic Dr. Maestrini spoke about in her lecture. The speaker coming from Rome (IT), started his talk by highlighting that there are different categories of people involved in sport activities with different CV adaption and different risk. Going deeper in her speech, Dr. Maestrini presented very interesting data on echocardiography and its application in people performing sports, given by real clinical cases. More in particular the speaker talked about computed tomography coronary angiography, exercise stress echocardiography, CMR, T1 mapping and exercise CMR.



- What are the main categories of people performing sports from the speaker point of view?
- How to evaluate an athlete based on the data presented by the speaker?
- What is the role of echocardiography in the athlete evaluation?
- What is the value of the exercise stress test from the speaker point of view?
- What is the role of CTCA in the athlete screening evaluation?
- What's about the exercise stress echocardiography?
- What is the role of CMR in the athlete evaluation?
- What's about CMR – T1 mapping and exercise CMR?

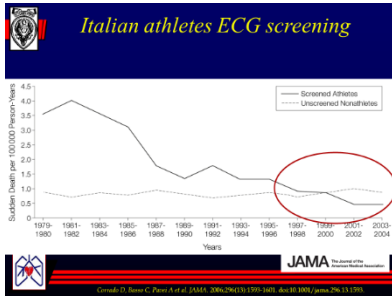
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Is the ECG screening in all, athletes and no athletes, the answer?

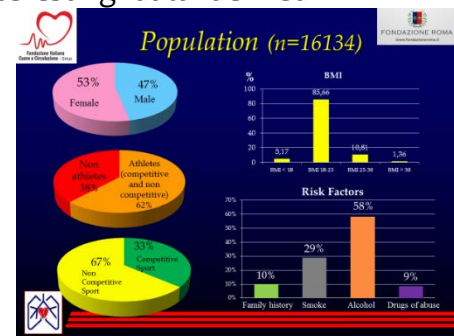
- Yes



about ECG screening and its results in identifying people at risk. More in particular the speaker discussed the data given by a meta-analysis on the value of ECG for the screening of cardiovascular diseases in young athletes. Finally, he presented very interesting data given by the experience of his team of by highlighting that starting ECG, in the 21% of these were present leading to conclusion, Prof. Fedele screening permit the leading to the onset of SCD.

How many lifes saved per year?

Disease	Incidence of SCD	% of life saved/year in our population
BCMA American Journal of Cardiology 2014;113(19):1599-1609	0.4%	0.021%
Repsale syndrome J Am Heart Assoc. 2013 Aug 6;2(8)	3.4%	0.1%
NIH/Fickman-White syndrome Trends Cardiovasc Medicine 4 December 2010 Long-term survival of Fickman-White syndrome and syndrome	0.2%	0.011%
Long QT syndrome Pediatr Cardiol. 2014;35(5):963-70	0.5%	0.02%
Dilated cardiomyopathy and arrhythmias Resusc 2014; 2017 Jan 3;27(1):46-48	0.7%	0.03%



research, from 16134 students screened by young people, abnormal ECG deeper examinations. In pointed out that the ECG diagnosis of occult diseases

- What is the economic sustainability of the ECG screening from the speaker point of view?
- How many lives are saved per year based on the data presented by the speaker?
- What are the mayor abnormal ECG findings developed by the speaker with his ECG screening project?
- What's about the sensitivity and specificity of the athlete ECG criteria?
- What's about the data of the Italian athletes' ECG screening presented by the speaker?
- What are the main causes of sudden death in young competitive athletes?

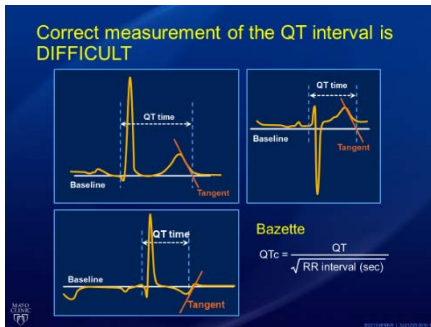
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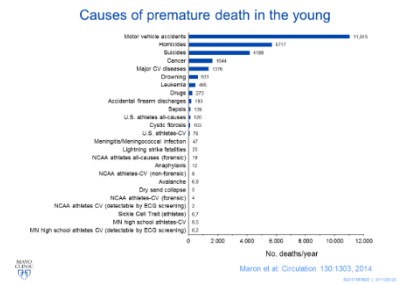
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Is the ECG screening in all, athletes and no athletes, the answer?

- No



The answer No about the ECG screening in all, athletes and not athletes was the topic at the core of the lecture discussed by Prof. Brady. The speaker, coming from Rochester (USA), introduced his talk by presenting data on the screening for sudden disease and its complexity. Going deeper in his lecture, Prof. Brady, spoke about the advantages of the ECG screening, but also about the



difficulties linked with its interpretation and more in particular about the QT measurements, leading to only the 50% of correct ECG readings. In the main part of his lecture the speaker presented data on some disadvantages of the ECG screening, mainly due to wide range of normal variants, normal range values not universally defined, differences by gender, age and race and others. In conclusion, Prof. Brady pointed out that in USA at this time there is an insufficient evidence to support universal screening ECG in asymptomatic young people for CV disease.

ECG screening the in athlete and non-athlete: Conclusions

- SCD in the young (athletes and non-athletes) low event rate occurrence
- (In the USA) *Insufficient* evidence (at this time) to support universal screening ECG's in asymptomatic young people for CV disease (Class III, Level C)
- Given the same risk of SCD (athletes versus non-athletes), future screening measures or programs, if implemented, should NOT be restricted to athletes

- What are the main causes of premature death in the young?
- What are the main implications of a positive ECG result from the speaker point of view?
- What are the major advantages for the performance of the ECG screening in young people?
- What are the major disadvantages of the ECG screening from the speaker point of view?
- What's about the correct classification of the QT interval?

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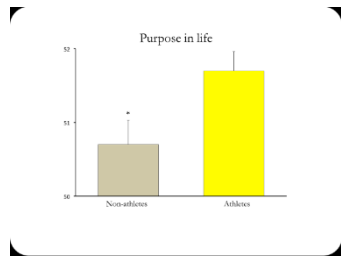
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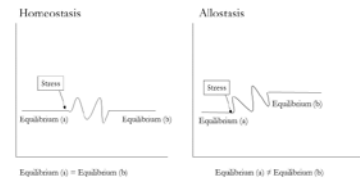
Not only heart.



making decisions. In the main part of his presentation Prof. Alleva



Not only heart was the topic of Prof. Alleva presentation. The speaker, coming from Rome (IT), talked about stress and its negative but also positive effects. Going deeper in his lecture, the speaker highlighted that stress is linked with positive situations like cognitive reactions, thinking activity, making decisions. In the main part of his presentation Prof. Alleva spoke about two concepts: homeostasis and allostasis, pointing out that the control capacity leads to wellbeing conditions. The speaker presented very interesting data on sport and wellbeing given by a questionnaire dispensed to young people, where athletes presented higher levels of autonomy, environmental mastery, personal growth, purpose in life and self-acceptance, compared to non-athletes.



- What's about the level of self-acceptance in athlete young people?
- What 's about the purpose in life, autonomy and personal growth in athletes?
- What's about the gender differences in the purpose in life and self-acceptance?
- How to measure the state of wellbeing from the speaker point of view?
- What's about stress and control capacity from the speaker point of view?

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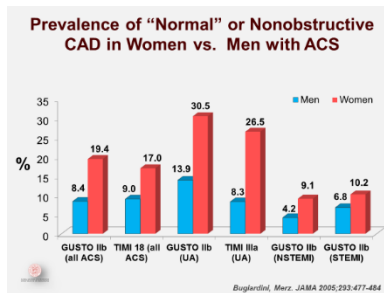
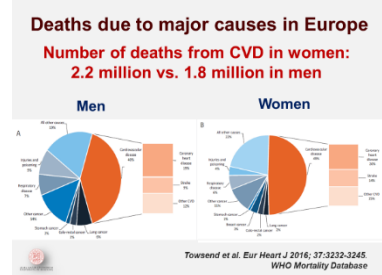
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Women and cardiovascular disease



Women and cardiovascular disease was the topic of Prof. Bugiardini presentation. The speaker, coming from Bologna (IT), addressed the audience, by talking about the so called “Yentl syndrome”. Prof. Bugiardini presented a huge amount of data given by clinical studies on CVDs and the differences in diagnosis, prognosis and outcome between women and men. The speaker discussed the data given by the

SAVE study, the Euro Heart Survey of Stable Angina, the ACSII registry, the CURE trial and others. More in particular Prof. Bugiardini pointed out that between men and women of less than 55 years old the differences in CHD mortality are very significant and that in women there is an underutilization of evidence-based therapies than in men. In the last part of his lecture Prof. Bugiardini spoke



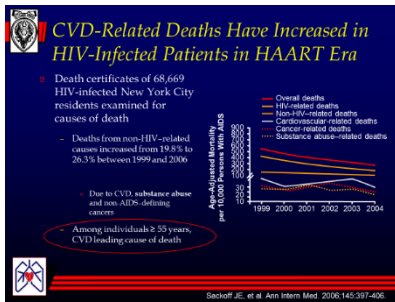
about the sex-related differences in the treatment of patients with CVDs, the differences in MI presentation by sex, the differences in Ischemic Heart Diseases symptoms and presentations and finally about the differences in atherosclerotic lesions between men and women. In conclusion, the speaker pointed out that these analyses indicate that sex differences in outcomes persist among STEMI patients and that women have a worse outcome as regard the in-hospital mortality.

- What is the prevalence of “normal” or nonobstructive CAD in women vs. Men with ACS?
- What’s about the sex differences in IHD symptoms and presentation?
- Do we need sex-specific threshold for high sensitivity troponins in ACS?
- What’s about the sex differences in reperfusion in young patients with STEMI?
- What are the main unanswered questions?

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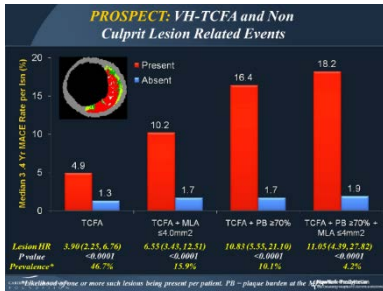
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HIV and cardiovascular disease



HIV and cardiovascular disease was the topic at the core of Dr. Mancone presentation. The speaker, coming from Rome (IT), presented very interesting data given by clinical studies on HIV-infected patients and their cardiovascular risk profile. Going deeper in his lecture, Dr. Mancone presented very interested data on the metabolic abnormalities affecting HIV- infected patients and their effects on the hearth and vasculature. More in particular the speaker talked about the abnormalities caused by the endothelial dysfunction, the lipid disorders typical in these patients, the viral protein-related endothelial cell activation, the systemic inflammatory cytokine-chemokine dysregulation, the enhanced atheroma formation and finally about the effects of the prothrombotic state. In conclusion, Dr. Mancone pointed out that CVD-related deaths have increased in HIV-infected patients in HAART era.

-
1. Endothelial dysfunction
 2. Lipid disorders associated with HIV infection
 3. Viral protein-related endothelial cell activation
 4. Systemic inflammatory cytokine-chemokine dysregulation
 5. Direct HIV infection of endothelium and vascular smooth muscle cells
 6. Enhanced atheroma formation by activated macrophages
 7. Prothrombotic state

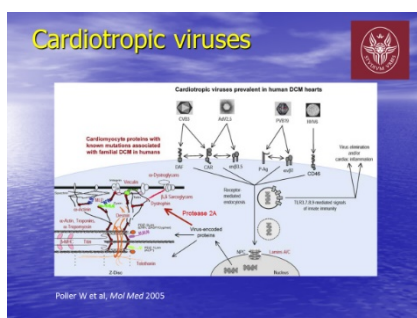


- What are the main factors that potentially influence CV risk in HIV-infected patients?
- What's about the heterogeneity of vascular lesions in HIV-infected patients?
- What are the main lipid disorders associated with HIV infection?
- What's about the endothelial dysfunction in HIV-infected patients?
- What are the main effects of the HIV infection on the Hearth?

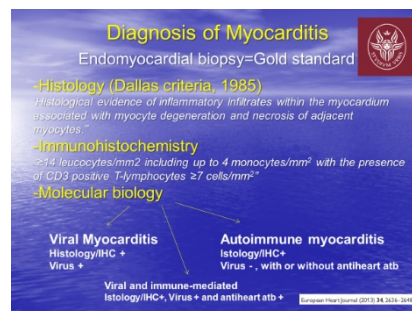
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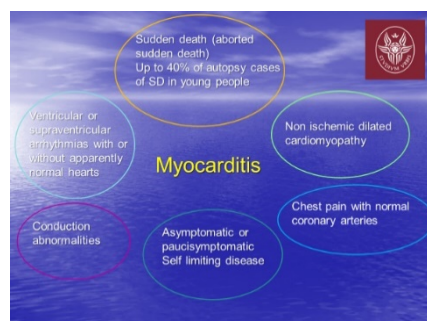
Infective disease and cardiovascular pathology



Infective disease and cardiovascular pathology was the topic discussed by Dr. Chimenti. The speaker, coming from Rome (IT), presented very interesting data about the cardiotropic viruses and their effects on the heart like myocarditis, progressive cardiac dysfunctions and dilated cardiomyopathy. In the first part of her presentation, Dr. Chimenti spoke about the diagnosis and the applied methodologies, like



histology, immunohistochemistry and molecular biology, by presenting data given by her team of research. In the main part of her lecture the speaker talked about treatment, by presenting data on the effects of interferone- β , immunoglobulins and antiviral drugs like acyclovir, ganciclovir, valciclovir, ribavirin, plecoranil, oseltamivir, zanamivir and peramivir and about the



immunosuppressive therapy. Finally, Dr. Chimenti presented other data on specific complications due to myocarditis like asymptomatic self-limiting disease, chest pain with normal coronary arteries, non-ischemic dilated cardiomyopathy, sudden death, conduction abnormalities and ventricular or supraventricular arrhythmias. In conclusion, the speaker pointed out that a correct diagnosis of myocarditis is possible only with the histological, immunohistochemical and molecular biology evaluation on tissue specimens.

- What are the main recommendations about the treatment of the autoimmune myocarditis?
- What are the main drug used for the treatment of the viral myocarditis?
- What's about serology in the diagnosis of the viral myocarditis?
- What are the main characteristics of the lymphocytic myocarditis?
- What's about the diagnosis of myocarditis?
- What are the main cardiotropic viruses presented by the speaker?

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The essential role of educational development: ACC perspective

Team Based Care Models



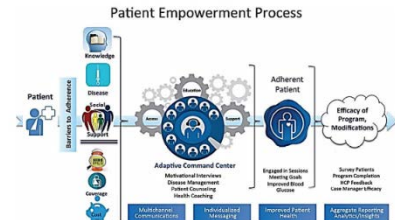
Prof. O’Gara from Boston (USA), spoke about the essential role of the educational development as an American College of Cardiology perspective, by presenting very interesting data on the practice of CV medicine in the 21st century, the goals of lifelong learning, the mechanisms for improving learning and finally on the implications for training. Going deeper in his lecture the speaker pointed out that in these last 20 years there was an explosion of information and knowledge, a dramatic improvement in specializations, the implementation of a new team based care, a significant patients’ empowerment linked with the growth of the public reporting and the external regulations. In the main part of his lecture Prof. O’Gara presented very interesting examples on all these topics, by highlighting the differences in training between the past and the present years. More in particular, about the goals of lifelong learning the speaker

pointed out that what is important is not increase knowledge per se but identify gaps in knowledge and performance, create individualized mechanisms to close gaps, measure progress toward reducing gaps with the aim to assess effect on patients outcomes. In conclusion, Prof. O’Gara pointed out that other than knowledge, competence and performance, it is important to account even for patients outcomes and satisfaction and also for cost and resource utilization for a better accountability of the educational skills.

Implications for Training

- Relationship between the composition of a training program and the needs of society
- Emphasis on clinical reasoning
- Other skills necessary for the 21st century
- Balance between work hour regulations and expectations for performance
- Assessment of competence
- Careers in academic cardiology

Patient Empowerment



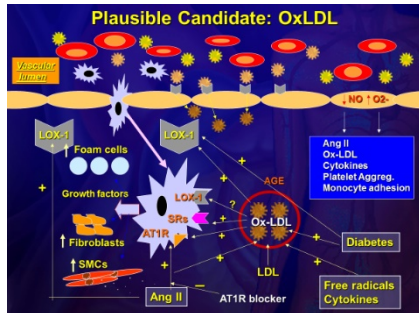
- What about the goals of lifelong learning?
- What’s about the broader accountability in education?
- What are the main implications for training from the speaker point of view?
- What’s about the Team based care model presented by the speaker?
- What’s about the Heart Team from the speaker point of view?

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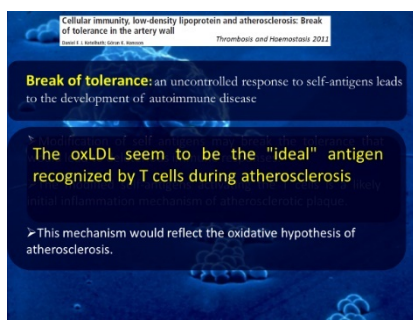
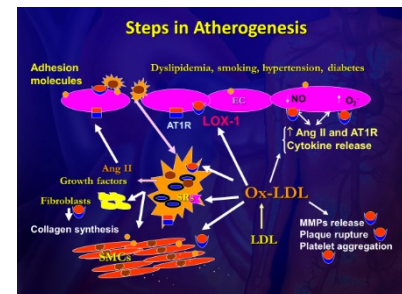
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Role of the oxLDL and the inflammatory process



The role of the oxLDL and the inflammatory process, was the topic discussed by Dr. Muscoli. More in particular the speaker, coming from Rome (IT) presented very interesting data on atherosclerosis and the mechanisms leading to its onset and growth. Going deeper in his lecture, Dr. Muscoli talked about the metabolic theory, by presenting data on the role of total and LDL cholesterol and the involvement of the ox-LDL in the process leading to the plaque formation, its progression and vulnerability. In the main part of his talk, the speaker, presented data given by in vitro studies on the role played by LOX-1, the oxidized low density lipoprotein receptor-1, in the onset of the atherosclerotic process, by speaking about its effects mediated through the endothelial dysfunction, the expression of the adhesion molecules, the interaction with AGE,



the cross-talk with AT1R, the Apoptosis processes and finally through restenosis. The activation of the T cell pathway is at the core of the atherosclerotic process, the speaker pointed out for the role played by the oxLDL as the ideal antigen recognized by T cells. In conclusion, Dr. Muscoli, pointed out that the onset of Atherosclerosis is due to an uncontrolled response to self-antigens, leading to the development of an autoimmune disease, with the oxLDL at the core of this process.

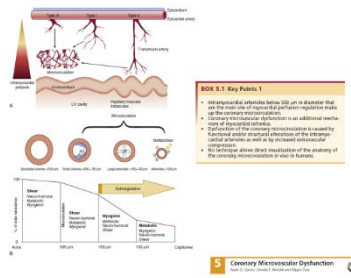
- What is the role of Ox-LDL in Atherogenesis?
- What is the relationship between endothelial dysfunction and oxLDL?
- What is the major role played by LOX-1 in the onset of the atherosclerotic process?
- What are the main steps in atherosclerosis presented by the speaker?
- What are the main processes leading to the rupture of the atherosclerotic plaque?
- What is the role played by the T-Cells in the onset of the atherosclerotic process?

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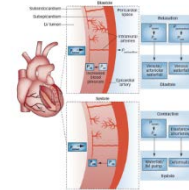
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Microcirculation dysfunction in different clinical settings



Prof. Camici from Milan (IT), spoke about microcirculation dysfunction in different clinical settings. At the beginning of his lecture, the speaker presented very interesting data on the symptoms associated with coronary microvascular dysfunction, like effort and rest angina, angina equivalents and on predominantly rest angina. Going deeper in his presentation, Prof. Camici, talked about the mechanisms of coronary microvascular dysfunction starting from the vascular ones, by highlighting the tight correlation between microvascular angina and women, the correlation

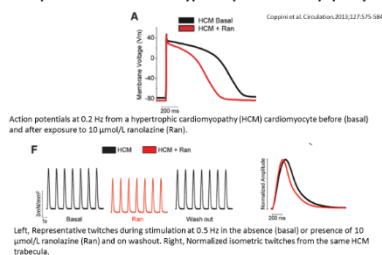
Mechanisms of Coronary Microvascular Dysfunction "Extra-vascular"



Camici PG, d'Amati G, Rimoldi O. Nat Rev Cardiol. 2015 Jan;11(1):48-62

between microvascular remodelling and the coronary flow and the functional changes leading to the microvascular spasm. In the main part of his lecture, the speaker talked about the extravascular mechanisms leading to the onset of the microvascular dysfunction and presented very interesting data on the correlation between microvascular dysfunction and HCM. Finally, Prof. Camici, presented data on the effects of Ranolazine in patients affected by hypertrophic cardiomyopathy and microvascular dysfunction.

Late Sodium Current Inhibition Reverses Electromechanical Dysfunction in Human Hypertrophic Cardiomyopathy



between microvascular remodelling and the coronary flow and the functional changes leading to the microvascular spasm. In the main part of his lecture, the speaker talked about the extravascular mechanisms leading to the onset of the microvascular dysfunction and presented very interesting data on the correlation between microvascular dysfunction and HCM. Finally, Prof. Camici, presented data on the effects of Ranolazine in patients affected by hypertrophic cardiomyopathy and microvascular dysfunction.

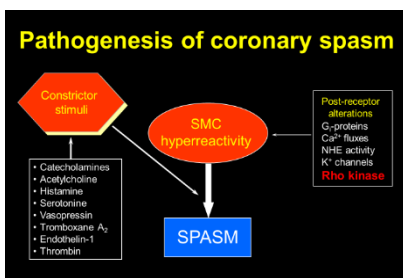
- What are the effects of ranolazine on coronary microvascular dysfunction in patients with HCM?
- What are the main extra-vascular mechanisms leading to the onset of coronary microvascular dysfunction?
- What is the potential role of the Rho-kinase inhibitors for the treatment of macro and microvascular coronary spasms?
- What are the main vascular mechanisms of coronary microvascular dysfunction?
- What are the main symptoms associated with the presence of coronary microvascular dysfunction?

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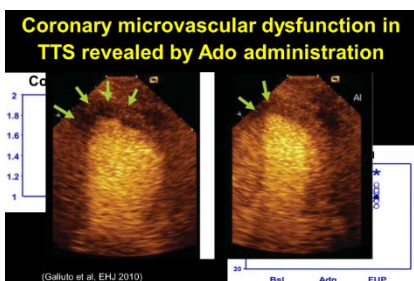
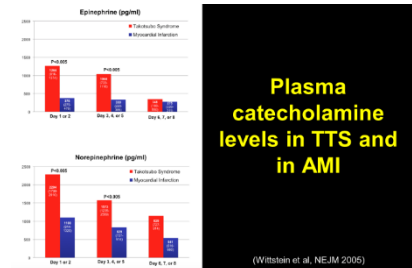
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Role of the cardiac adrenergic innervation and microvascular constriction



The role of the cardiac adrenergic innervation and microvascular constriction was the topic discussed by Prof. Crea in his lecture. The speaker coming from Rome (IT), talked about coronary vasoconstriction divided into subacute coronary artery disease and acute coronary syndrome, by presenting very interesting data on vasospastic angina, microvascular angina and the

takotsubo syndrome. Going deeper in his lecture, Prof. Crea talked about the pathogenesis of the coronary spasm, pointing to the central role played by the smooth muscle cells hyperactivity and the Rho Kinase receptors. In the last part of his presentation, the speaker talked about the mechanisms



leading to the onset of the Takotsubo syndrome, by presenting data on the intense sympathetic activation, the individual susceptibility and finally on the microvascular spasm, the direct myocardial toxicity and the cell survival cascade activation. In conclusion, the speaker pointed out that in the vasospastic angina the spasm is due to the hyperreactivity of the smooth muscle cells probably related to the enhancement of the Rho kinase receptor activity.

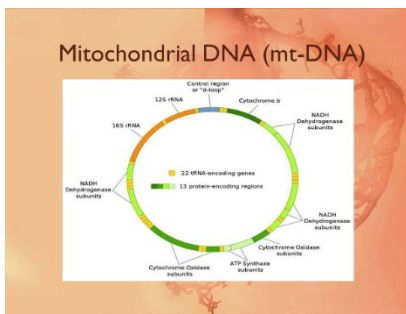
- What is the role played by the alpha stimulation in the pathogenesis of the Takotsubo syndrome?
- What is the role played by the microvascular constriction in the onset of the microvascular angina?
- What are the main steps of the pathogenesis of the Takostubo syndrome?
- What's about the relationship between Coronary artery spasm in suspected angina and stenosis?
- What is the pathogenetic model of the coronary spasm presented by the speaker?

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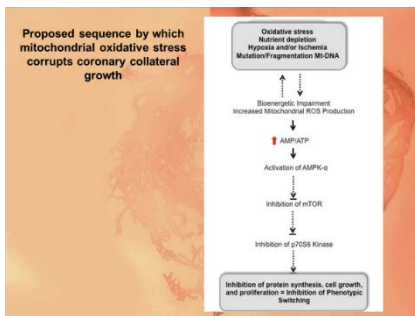
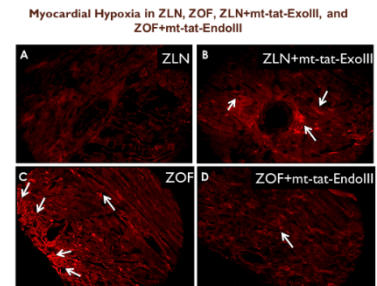
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Role of mitochondrial oxidative stress in the coronary vessel



Prof. Chilian from Rootstown (USA), presented very interesting and impressive data on the role of mitochondrial oxidative stress in the coronary vessel. More in particular the speaker talked about the mitochondrial DNA and its tendency to be injured leading to the dysfunction of the mitochondria. At the beginning of his presentation Prof. Chilian addressed the audience with this question: “is the

mitochondrial dysfunction the key for the onset of the coronary metabolic dilation?” The speaker went deeper in his lecture, by presenting a huge amount of data given by preclinical studies in order to give a complete answer to this



question. In the last part of his presentation, Prof. Chilian spoke about the relationship between mitochondrial function and the coronary collateral growth, by highlighting the role played by the mitochondrial oxidative stress in the corruption of the coronary collateral growth. In conclusion, the speaker pointed out that the mitochondrial function is negatively impacted by the oxidative stress and that both acute and chronic regulation of the coronary circulation are negatively impacted by impairments in the mitochondrial function.

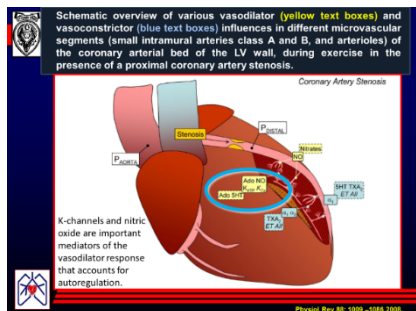
- What is the proposed sequence of the effects of the mitochondrial oxidative stress on the coronary collateral growth?
- What are the effects of Rotenone and of the mitochondrial dysfunction on the energy sensors and regulators of the protein synthesis?
- Is mitochondrial function a key factor for the coronary collateral growth?
- Is mitochondrial function a key factor for the coronary blood flow dilatation?

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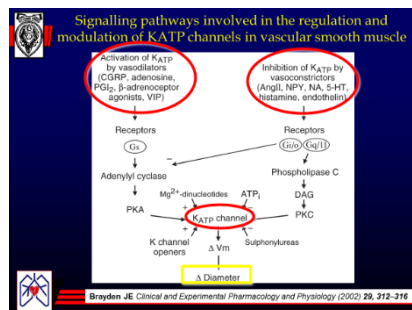
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Role of cardiac metabolism: crosstalk between myocardial energy state and coronary blood flow

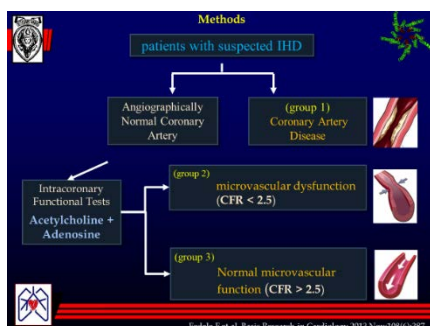


The main topic at the core of Prof. Severino presentation, was the role of the cardiac metabolism in the dialog between the myocardial energy state and the coronary blood flow. The speaker, coming from Rome (IT), presented very interesting data given by the main studies running on cardiac metabolisms and circulation. Going deeper in his lecture Prof. Severino spoke about the mechanisms leading to vasodilation and

vasoconstriction at the coronary level in different metabolic states. In the main part of his presentation the speaker presented very interesting data on the relationship between the myocardial metabolism and the coronary perfusion, by highlighting the role played by genetics in these mechanisms



through the Nav, K⁺, KATP and Kv channels activities and functions. In the last part of his stalk Prof. Severino spoke about a genetic study performed in his Center, on the role of the ion channels genetic polymorphism in the pathophysiology of coronary microvascular dysfunction and ischemic heart disease. In conclusion, the speaker pointed out that the results of this study confirm a potentially important implication of genetic polymorphisms for coronary vasomotor in the susceptibility to IHD .



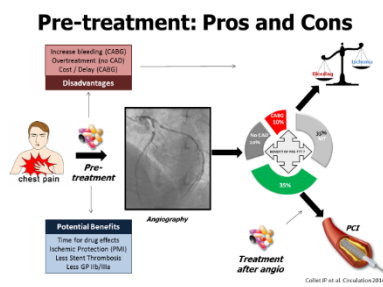
- What's about the gender differences in the subgroup analysis presented by the speaker?
- What's about the methods of the genetic study presented by the speaker?
- What is the study design presented by the speaker?
- What's about the role played by KATP channels from the speaker point of view?
- What is the role played by the K⁺ channels in the coronary arterial smooth muscle cells?

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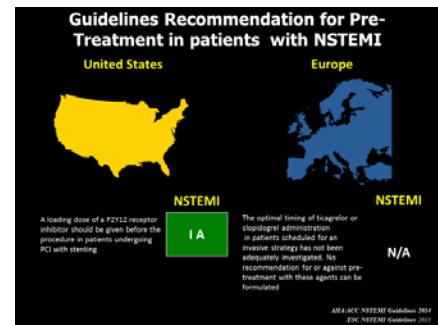
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Pretreatment with P2Y₁₂ receptor inhibitors: pro and con

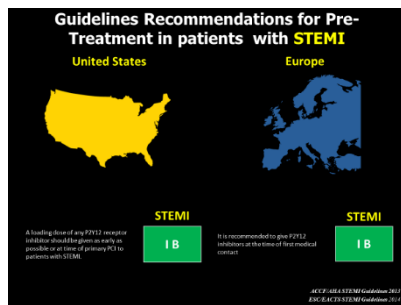


The main topics at the core of Prof. Collet Bortone presentation, were the pro and con of the pre-treatment with P2Y₁₂ receptors inhibitors in patients affected by acute coronary syndromes. The speaker, coming from Amsterdam (NL), presented very interesting data, starting from the pre-treatment

definition and the potential benefits and disadvantages related to this practice. Going deeper in his lecture, Prof. Collet Bortone presented a huge amount of data given by



clinical studies running in patients undergoing percutaneous coronary intervention on the effects of clopidogrel, ticagrelor and prasugrel administered in pre-treatment phase in NSTEMI patients and on the effects of thienopyridine and ticagrelor in STEMI patients. In conclusion, the speaker pointed out that the existing literature does not strongly support the routine pre-treatment with P2Y₁₂ inhibitors and the decision to administer pre-treatment should be guided by an individualized approach.



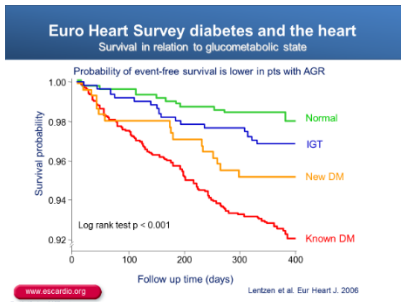
- What are the Pros and Cons of the Pre-treatment from the speaker point of view?
- What's about the Clopidogrel Pre-treatment and its effect on mortality and bleeding?
- What about the Guidelines Recommendation for Pre-Treatment in patients with NSTEMI?
- What's about the pre-treatment effect with prasugrel in NSTEMI acute coronary syndrome?
- What's about the Guidelines Recommendations for Pre-Treatment in patients with STEMI?
- What is the effect of platelet inhibition with cangrelor during PCI on the ischemic events?

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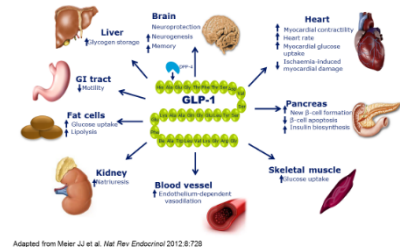
Cardiovascular disease and diabetes: a critical evaluation of recent outcome trials



Prof. Cosentino from Stockholm (Sw) spoke about a critical evaluation of the recent clinical trials on Cardiovascular disease and diabetes, by highlighting the glucose perturbations in patients with ACS and stable CAD. Going deeper in his talk the speaker presented a huge amount of data given by the most recent clinical trials on cardiovascular disease and diabetes. More in particular Prof. Cosentino pointed out

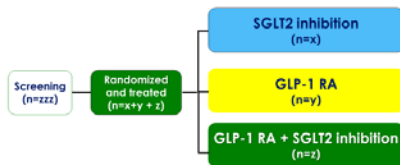
that the contemporary trials on glucose lowering drugs running in more than 120000 T2 DM patients showed no differences in cardiovascular death or non-fatal myocardial infarction or stroke with any glucose lowering drug tested. In the last part of his lecture the speaker discussed the data

Mechanisms of action Many other possibilities beyond glucose control



Clinical trial based on the effect of SUSTAIN 6 and LEADER + EMPA-REG outcome

The combination of GLP1-RA and SGLT2 inhib will further improve cardiovascular outcome in patients with T2DM and high CV-risk



given by the SUSTAIN 6, the EMPA-REG and the LEADER trials, by highlighting the potential importance of the drugs' duration of action and its impact on stroke, myocardial infarction and revascularization. In conclusion, the speaker pointed out that is the time to design a new clinical trial based on the effects of these three trials in order to obtain a further improvement in cardiovascular outcomes in patients with Type 2 DM at high CV-risk.

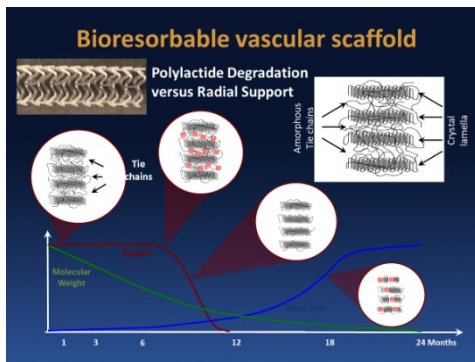
- What's about the mechanisms of action of SGLT2 inhibitors and the GLP-1 RA?
- What was effectively tested in the trials of glucose lowering drugs in T2DM patients from the speaker point of view?
- What's about the outcome of the trials on glucose lowering drugs in T2DM patients?
- How many trials have been conducted on glucose lowering drugs in T2DM patients since 2008?

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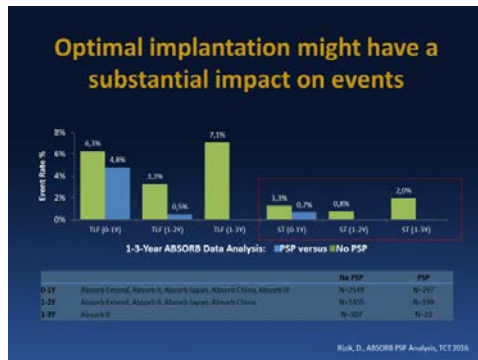
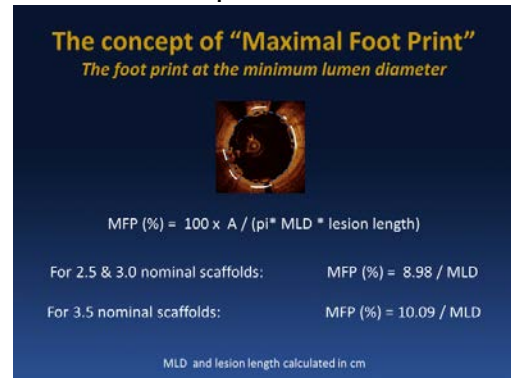
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Bioresorbable vascular scaffold: the present and the future



The present and the future of the bioresorbable vascular scaffold in ACS patients was the topic at the core of Prof. Diletti presentation. The speaker coming from Rotterdam (NL), at the beginning of his presentation talked about the main characteristics of the bioresorbable vascular



scaffolds and about their clinical evidences through the presentation of data given by initial cohort studies, Registries and randomized controlled trials. In the main part of his talk Prof. Diletti spoke about the concept of the so called "Maximal Foot Print", that is the foot print at the minimum lumen diameter, by presenting data given by the ABSORB Japan and China studies. Finally, the speaker talked about the implantation technique, by presenting very impressive data on the effects that an optimal implantation technique has in term of adverse events reduction.

events reduction.

- What is the effect of reduction of the thickness of the polymer from the speaker point of view?
- What's about the 2 years clinical results of the ABSORB China trial?
- What are the clinical outcomes of the ABSORB Japan trial?
- What's about ABSORB III trial?
- What is the initial experience in the real world with the bioresorbable vascular scaffold application?

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Thrombectomy during primary PCI

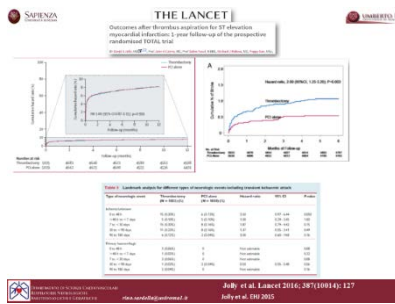
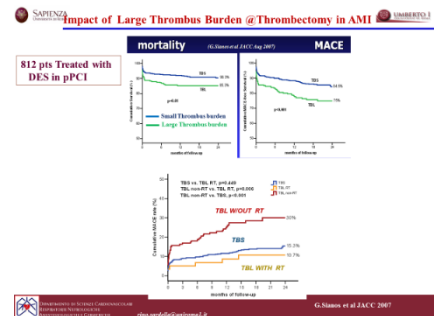


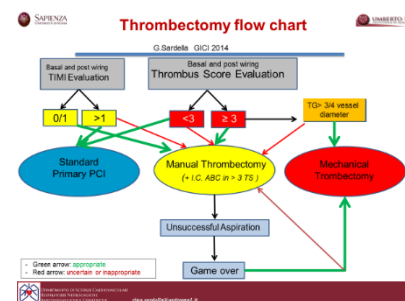
Abb: et al. Lancet 2016; 387(10044): 117 July et al. BMJ 2015

Thrombectomy during primary PCI was the topic at the core of Prof. Sardella presentation. The speaker coming from Rome (IT), at the beginning of his presentation talked about the 2015 ACC/AHA/ SACI guidelines that substantially did not recommend this procedure. Going deeper in his lecture Prof. Sardella presented a huge

amount of data given by clinical studies on patients treated with the conventional PCI compared to thrombectomy plus PCI, by highlighting that there are no differences in outcome between the two procedures. In the main part of his talk, the speaker presented other data in order to answer to these two question: how to aspirate and when. This lecture was



Statin et al JACC 2007



characterized by the presentation of some clinical data given by real patients with the aim to find very practicable answers to these two questions. In conclusion, the speaker pointed out that it is necessary to perform a manual thrombectomy when the thrombus is more or less at level 3 of the rating scale, in case of a thrombus more than $\frac{3}{4}$ of the vessel's diameter, the mechanical thrombectomy is recommended.

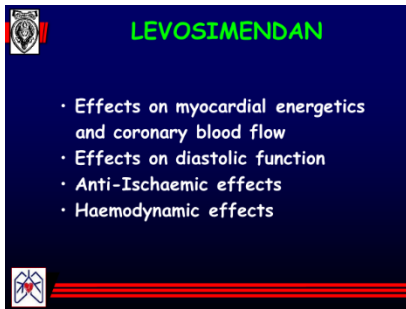
- What are the main results of the TAPAN trial presented by the speaker?
- What are the physiopatological key points on thromboaspiration presented by the speaker?
- What is the mortality rate in MACE trial presented by the speaker?
- What's about manual and mechanical thrombus aspiration from the speaker point of view?

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Cardiogenic shock: pharmacological and non-pharmacological therapies

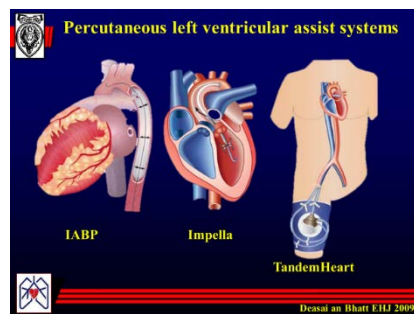


The pharmacological and non-pharmacological therapies of the cardiogenic shock was the topic Prof. Mancone talked about. The speaker coming from Rome (IT), at the beginning of his presentation talked about the clinical classification of the acute heart failure, its hemodynamic profile and on the ESC 2016 guidelines on the

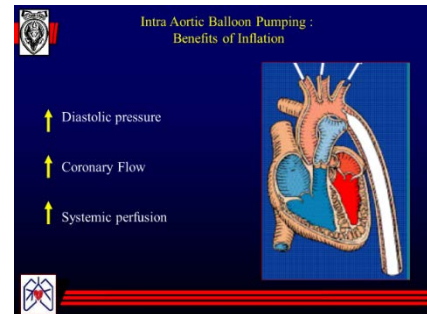
management of patients with AHF. In the main part of his lecture, Prof. Mancone presented many data given by clinical

trials on therapy and more in particular on the effects of

Levosimendan, the intra-aortic balloon pumping, the pulsecatch iVAC 2L left ventricular assist device and on the effects of the percutaneous left ventricular assist systems. In conclusion, the speaker pointed out that the key for a good outcome is an organized approach with rapid diagnosis and prompt initiation of the therapy in order to maintain blood



pressure and cardiac output.

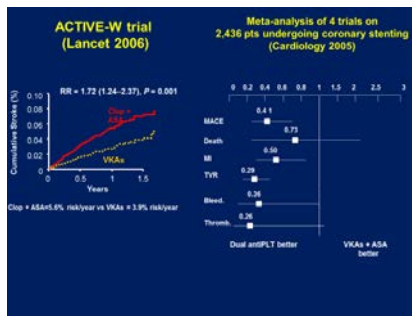


- **What's about the strategy for acute refractory cardiac failure presented by the speaker?**
- **What are the percutaneous left ventricular assist systems presented by the speaker?**
- **What's about EuroIntervention?**
- **What are the main results of the Intra-Aortic Balloon Pumping?**
- **What are the main results of the Levosimendan infusion presented by the speaker?**

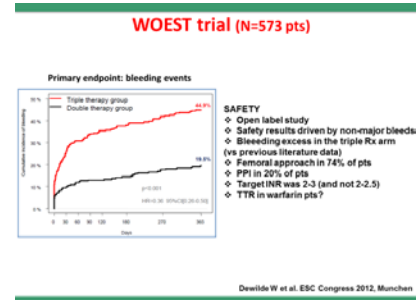
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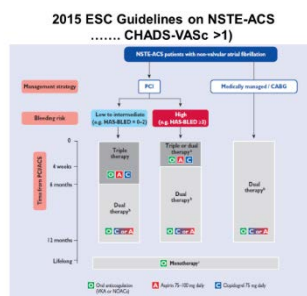
Dual antiplatelet therapies issue in Atrial fibrillation patient



The dual antiplatelet therapies issue in Atrial fibrillation patient was the topic at the core of Prof. Patti presentation. The speaker coming from Rome (IT), at the beginning of his talk presented very interesting data on the antithrombotic strategies performed in ACS patients with atrial fibrillation, by



highlighting that the total permutations throughout one year are about 2.8 million. In the main part of his lecture Prof. Patti



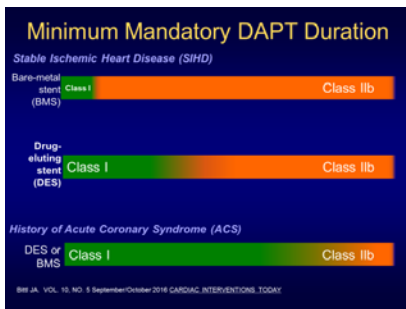
presented very interesting data given by clinical trials on the possible antithrombotic strategies other than triple therapy in the setting of contemporary PCI, by speaking about a Danish registry, the WOEST trial that compares the triple therapy with the double therapy, the effects of prasugrel in triple therapy, the concomitant use of antiplatelet therapy with dabigatran or warfarin in the RE-LY trial and finally about the PIONEER AF-PCI study design.

- What's about the possible antithrombotic strategies other than the triple therapy presented by the speaker?
- What's about the 2015 guidelines on NSTEMI-ACS with CHADS-VASc >1?
- What are the effects of Prasugrel in the triple therapy?
- What's about different antithrombotic regimen in AF patients following MI and coronary intervention?
- What's about the individual based approach between thrombo-embolic, bleeding and ischemic risks from the speaker point of view?

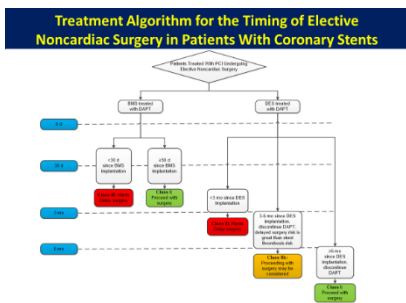
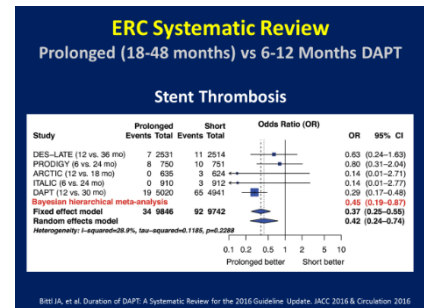
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Dual antiplatelet therapies issue in elective non-cardiac surgery



Prof. Casale talked about the dual antiplatelet therapies issue in elective non-cardiac surgery patient. The speaker coming from New York (USA), presented very interesting data on the perioperative management of dual antiplatelet therapy (DAPT), by highlighting the incidence of cardiovascular events and bleeding affecting these patients. Going deeper in his lecture, Prof. Casale spoke about the updated DAPT recommendations published in 6 guidelines related to the minimum mandatory DAPT duration, by presenting a huge amount of data given by clinical trials and meta-analyses on the effects of the different DAPT durations on mortality, major bleeding, myocardial infarction and stent thrombosis. In the last part of his presentation, the speaker talked about the relationship between DAPT side effects and types and sizes of the different stents produced over the time.



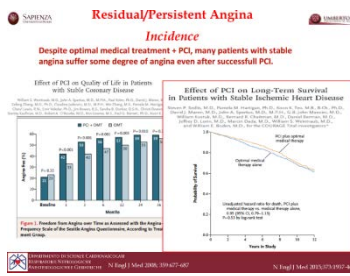
over the time. Finally, Prof. Casale presented data on the clinical implications of the choice of the short DAPT or the prolonged one and on the related guidelines recommendations. In conclusion, the speaker pointed out that there is a broad variability in the individual response to different antiplatelet agents and that in the absence of patient and procedure-specific recommendations from practice guidelines, the antiplatelet therapy management decisions should be individualized, based on the surgical context.

- What are the main clinical and procedural factors associated with the increase of the ischemic or bleeding risks presented by the speaker?
- What's about the platelet function testing for patients undergoing surgery from the speaker point of view?
- What's about bridging therapy?
- What are the main recommendations about the perioperative management of the antiplatelet therapy?
- What is the treatment algorithm for the timing of elective noncardiac surgery in patients with coronary stent presented by the speaker?
- What's about the clinical implications between short and prolonged DAPT from the speaker point of view?

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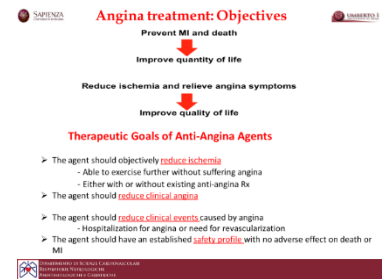
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The new drugs for the residual/persistent angina



The new drugs for the residual/persistent angina was the topic at the core of Prof. Calcagno presentation. The speaker coming from Rome (IT), at the beginning of his presentation spoke about the residual/persistent Angina definition and its incidence in patients with stable angina despite optimal medical therapy plus PCI. In the main part of

his talk, Prof. Calcagno presented a huge amount of data on the residual/persistent Angina treatment given by clinical trials running in these patients, by highlighting the limited mechanisms



of actions of the first line anti-angina drugs. In these second part of his talk the speaker presented data on the effects of Ivabradine, Nicorandil, Ranolazine, Trimetazidine and other non-pharmacological approach like the enhanced external counter pulsation and the coronary sinus reduced system. In conclusion, Prof. Calcagno pointed out that the metabolic and physiological drugs utilization is a safe and effective strategy for the treatment of the residual angina.



- What are the main residual/persistent angina invasive approaches?
- What is the Residual/Persistent Angina incidence based on the data presented by the speaker?
- What are the main Angina treatment objectives presented by the speaker?
- What's about the emerging anti-angina therapies presented by the speaker?
- What's about the effects of Ivabradine on outcomes in chronic HF patients?
- What are the main metabolic anti-angina effects of Ranolazine?
- What are the main effects of Ranolazine in ACS patients?
- What's about the efficacy and tolerability of trimetazidine in ACS patients?

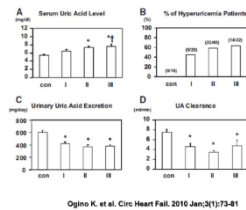
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Acid uric a new therapeutic target

Parameters of uric acid metabolism and percentage of hyperuricemia among patients with CHF



Ogino K, et al. Circ Heart Fail. 2010; Jan;3(1):73-81

Prof. Ambrosio talked about acid uric as a new therapeutic target for CVD. The speaker coming from Perugia (IT), presented very interesting data on the association between serum uric acid and cardiovascular disease. At the beginning of his presentation, Prof. Ambrosio addressed the audience with a very key question about uric acid: “elevated serum uric acid

concentration is a cause or a consequence or a mere harbinger of the Cardiovascular disease?” and in order to find a comprehensive answer he went deeper in his lecture by presenting a huge amount of data about the correlation between serum uric acid and metabolic syndrome, hypertension, and chronic heart failure. In the last part of his lecture the speaker talked about the correlation

Relationship of serum uric acid and systolic BP in children

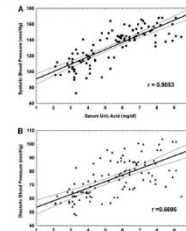
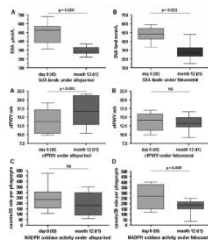


Fig. 11, et al. Hypertension 2003

between uric acid, the development of atherosclerosis and the molecular mechanisms of the crystal-related necroinflammation and finally, on the effects of the xanthine-oxidase inhibitors on the prevention of cardiovascular disease, by presenting data on allopurinol, oxipurinol and febuxostat. In conclusion, Prof. Ambrosio pointed out that the selectivity of XO-inhibition can play a primary role in the management of hyperuricemia, in addition to and beyond its effects on serum uric acid



Changes in SUA, PWV and oxidative stress in patients with gout treated with Allopurinol or Febuxostat

Tausche A-K et al. Rheumatol Int 2013

concentrations.

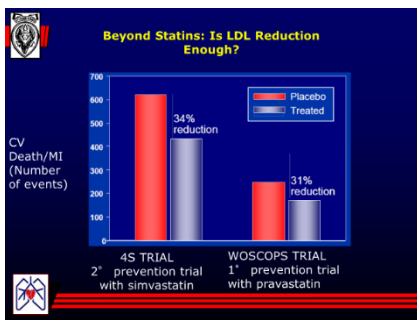
- What are the main effects of febuxostat on CVD outcome from the RCTs?
- What's about the effect of febuxostat on the plaque formation in atherosclerotic mice?
- What is the metabolic pathway through xanthine oxidase leading to hyperuricemia?
- What are the main mechanisms of the crystal-related necroinflammation?
- What's about uric acid and chronic inflammation in heart failure patients?

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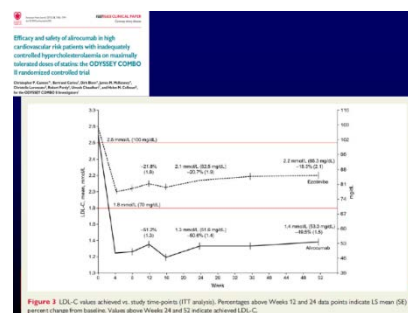
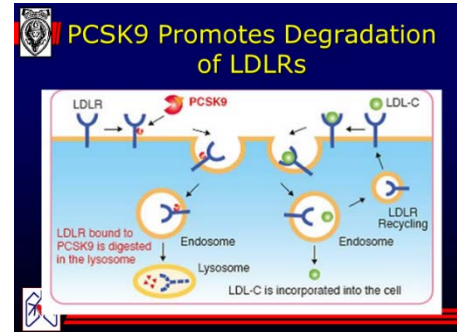
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Treating hypercholesterolemia: more than statins



Treating hypercholesterolemia: more than statins was the topic Dr. Adamo talked about. The speaker coming from Rome (IT), presented very interesting data on the unmet needs in the dyslipidaemia treatment, by highlighting the presence of an high residual risk for patients despite the LDL-cholesterol therapy. At the beginning of his lecture Dr. Adamo addressed the audience with

this question: “is LDL reduction enough?” and in order to find a comprehensive answer, he went deeper in his talk, by presenting a huge amount of data given by clinical trials on the effects of the LDL-cholesterol reduction in terms of event reduction. In the main part of his lecture, the speaker presented other data on the effects of the PCSK9 inhibitors on the LDL-cholesterol reduction, by highlighting that these drugs are targeted for high-level CV hypercholesterolemia patients, familial and statin intolerant patients. In conclusion, Dr. Adamo pointed out that PCSK9 is a key player in cholesterol metabolism and its inhibition strongly reduces the LDL-cholesterol levels over the time.



cholesterol reduction, by are targeted for high-level CV hypercholesterolemia patients. In conclusion, Dr. Adamo key player in cholesterol metabolism with monoclonal antibodies cholesterol levels over the

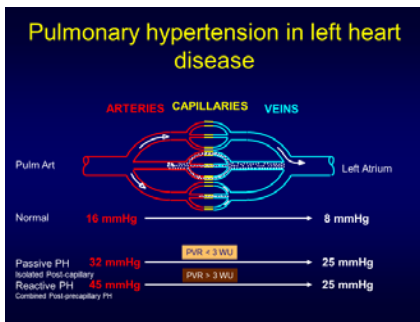
- What’s about the event reduction due to the PSCK9 inhibitors administrations?
- What are the new PSCK9 inhibitors approved for human use?
- What’s about the data on the discontinuation of statin therapy presented by the speaker?
- What’s about the DESCARTLES trial?
- What is the study design of the ODYSSEY COMBO II trial presented by the speaker?

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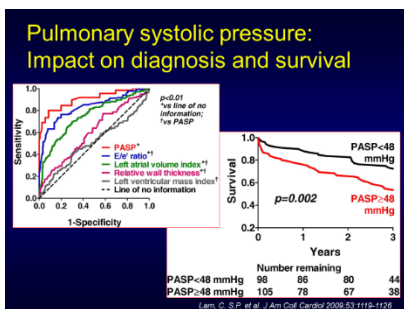
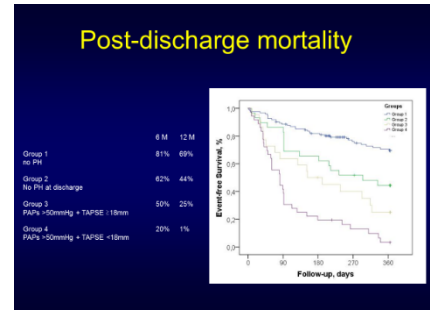
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Heart failure and Lung involvement



Heart failure and Lung involvement was the topic Dr. Vizza talked about. The speaker coming from Rome (IT), at the beginning of his presentation spoke about the pathophysiology and the new classification of the pulmonary hypertension in the context of the Heart Failure. Going deeper in his talk Dr. Vizza presented very interesting data given by some clinical

trials on pulmonary hypertension and right ventricular dysfunction in patients affected by HF with reduced ejection fraction and acute decompensated Heart Failure. In the main part of his presentation, the speaker talked about the echo approach as a diagnostic and prognostic tool to be applied in these patients, by presenting very interesting data given by a



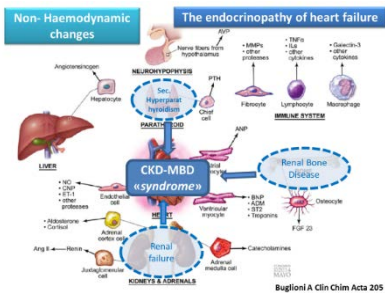
clinical study performed in 4 Italian Centers. In the second part of his speech, Dr. Vizza spoke about pulmonary hypertension in patients with HF with preserved EF, by presenting data given by the main clinical trials running in these patients. In conclusion, Dr. Vizza pointed out that PH and the right ventricular dysfunction are important prognostic factors in patients affected by stable advanced Heart Failure.

- What is the impact of the pulmonary systolic pressure on the diagnosis and the survival of HFpEF patients?
- What are key points of the echo approach presented by the speaker?
- What's about the post-discharge mortality in patients with PH and HF with reduced EF?

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Heart failure and Renal involvement



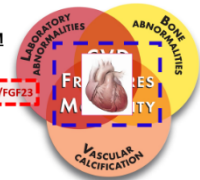
Prof. Mazzaferro talked about Heart failure and the Renal involvement. The speaker coming from Rome (IT), at the beginning of his presentation addressed the audience with this question: “what is the link between heart and kidney?” and in order to give a comprehensive answer, went deeper in his talk, by presenting very interesting data about the increasing awareness of the cardio-renal link. Prof. Mazzaferro talked about the cardio-renal syndrome, starting from the definitions

of its 5 types and presented data on the related clinical manifestations. More in particular he spoke about AKI (acute kidney injury) in comparison with CKD (chronic kidney disease) and their clinical manifestations, the association between renal and cardiac dysfunction and about the pathophysiology of the links between the heart and the kidney, by presenting data on the hemodynamic and non-hemodynamic changes. The speaker talked also about the kidney disease linked with the mineral bone disorder leading to CVDs and finally on the major

Definition of Chronic Kidney Disease - Mineral Bone Disorder (CKD-MBD)

Systemic disorder of **BONE** and **MINERAL METABOLISM** due to CKD manifested by either or:

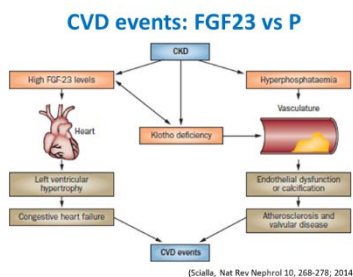
1. **LAB:** Calcium, Phosphate, FGF23, PTH, or Vitamin D
2. **BONE:** Turnover, Mineralization, Volume, growth, or strength
3. **VASCULAR:** or other soft tissue calcification



CKD-MBD

Moe et al. Kidney Int 2006;69:1945-1953

role played by the phosphate as the main inductor of the trans differentiation of the vascular muscle cells in osteoblast-like cells and of the bone synthesis of FGF₂₃, the factor responsible for the induction of the left ventricular hypertrophy. In conclusion, the speaker pointed out that the endocrinopathy of the HF patients is due to the activation of multiple deleterious cellular pathways responsible for tissue remodelling in the heart and in the kidney leading to fibrosis and loss of function.



- What is the correlation between FGF₂₃ and P in the process leading to the onset of CVD events?
- What's about the role of phosphate in the pathophysiology of the cardiac-renal syndrome?
- What are the main characteristics of the Chronic Kidney Disease and the Mineral Bone Disorder?
- What's about the haemodynamic changes in the pathophysiology of the cardiac-renal disease?
- What are the main characteristics of AKY vs CKD based on the data presented by the speaker?

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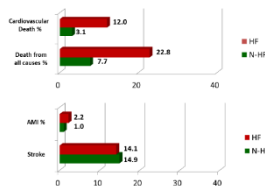
Heart failure and Brain involvement

Results - Baseline characteristics

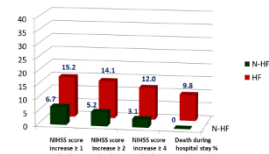
	NO HF n = 195 (68.2%)	HF n = 91 (31.8%)	p
Age, mean (SD)	66.1 (13.8)	72.8 (12.3)	< 0.001
Sex, M/F (%)	111 (56.9)	48 (52.7)	0.450
Hypertension (%)	133 (68.2)	74 (80.4)	0.031
Diabetes (%)	29 (14.9)	23 (25.0)	0.038
Previous stroke/TIA (%)	23 (11.8)	17 (18.5)	0.127
Arterial Vasculopathy (%)	22 (11.3)	33 (35.9)	< 0.001
Pre-stroke CHA ₂ DS ₂ -VASc score - mean (SD)	2.5 (1.5)	3.8 (1.7)	< 0.001
- median (IQR)	2 (1-4)	4 (3-5)	
Smoke (previous or present (%)	55/177 (31.1)	19/22.9)	0.173
Dyslipidemia (%)	85 (43.6)	41 (44.6)	0.877
CAD (%)	18 (9.2)	32 (34.8)	< 0.001
Atrial Fibrillation (%)	43 (22.1)	49 (53.2)	< 0.002
Known	39 (20.0)	43 (46.7)	
New diagnosis	4 (2.1)	6 (6.5)	

Heart failure and Brain involvement was at the core of Prof. Toni presentation. The speaker coming from Rome (IT), presented very interesting data on the stroke as the main brain pathology linked with the heart failure. Speaking about stroke, Prof. Toni, highlighted that up to 20% of acute ischemic stroke patients have left ventricle systolic dysfunction. The speaker presented also data given by a retrospective study performed in his clinical

Results - Long term outcome



Results - Short term outcome



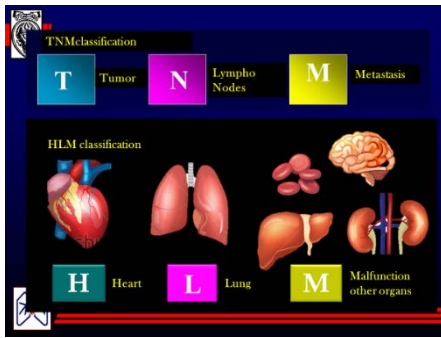
Center with the aim to evaluate the impact of HF on the short and long term outcome of patients affected by acute ischemic stroke. In conclusion, the speaker pointed out that in stroke patients with HF and AF, cardiac rhythm and/or frequency must be therapeutic goals with the aim to improve the left ventricle function and to reduce mortality.

- What are the main results of the retrospective study presented by the speaker on acute ischemic stroke patients affected also by HF?
- What's about the correlation between HF and ischemic stroke?
- What's about the differences in cardiovascular death between acute stroke patients with or without HF?
- What's about death from all causes in the same patients?

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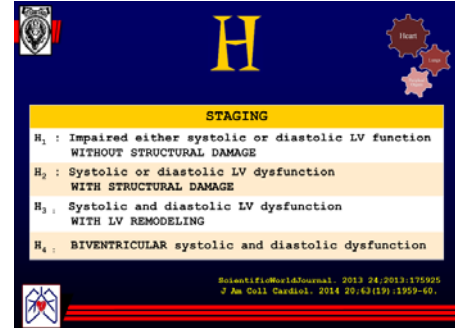
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HLM: the new TNM-like classification for heart failure

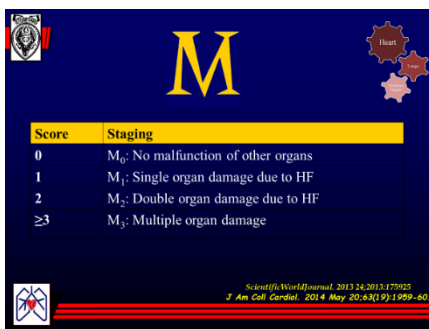


Prof. Fedele, the chairman of this symposium, talked about HLM as the new TNM-like classification for heart failure. The speaker coming from Rome (IT), at the beginning of his presentation talked about heart failure as a clinical syndrome, characterized by the presence of many other diseases like heart valve disease, ischemic heart disease, systemic hypertension, congenital heart disease and cardiomyopathies.

Going deeper in his lecture Prof. Fedele presented very interesting data on HF epidemiology and on the 2016 ESC classification compared to NYHA, ACC/AHA classifications and MAGGIC risk score and Seattle HF model, by highlighting the limits of all these classifications, with the intention to put evidence on the so called HLM classification as the new TNM-like classification. H for heart, L for lungs and M for peripheral organs the speaker pointed out. In the main part of his lecture, Prof. Fedele discussed about staging, by presenting a huge amount of data on



the methods for the staging assessment at the heart, lungs and kidney, liver, brain and blood levels. In the second part of his lecture, the speaker talked about an ongoing study running in his clinical Center, with the aim to evaluate the effectiveness of this new classification. In conclusion, Prof. Fedele pointed out that the HLM classification provides a more reliable lecture of clinic, laboratory and instrumental parameters for a better management of heart failure as a clinical syndrome.

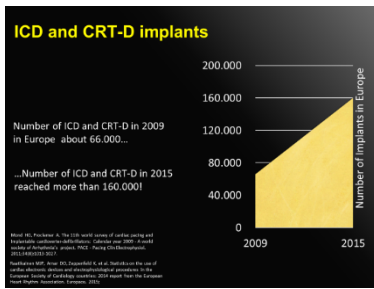


- What's about the rehospitalisation at six and 12 months in the 780 patients enrolled in the study presented by Prof. Fedele?
- What's about cardiovascular mortality in the same study population?
- What are the main characteristics of the M staging?
- What are the scores representing the malfunction of the other organs?
- What are the main kidney parameters used for the evaluation of the kidney function?
- What's about the L staging?
- What are the key points of the H staging?

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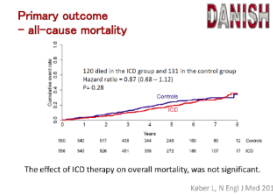
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The use of new ICDs in the primary prevention

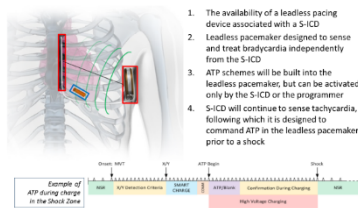


The use of new ICDs in the primary prevention was the topic of the Dr. Lavalle presentation. The speaker coming from Rome (IT), presented very interesting data on ICD and CRT-D implants, starting from the consideration that the number of implantations is three time the one in 2009 from 66.000 to 160.000 in 2015. Going deeper in his presentation, Dr. Lavalle spoke about the defibrillator implantation in patients with nonischemic heart failure and the related problems characterized by the suboptimal selection of patients and the ICDs complications. In the main part of his lecture, the speaker presented very interesting data on the S-ICDtm System, that is an effective defibrillation without transvenous leads, given by the pivotal studies conducted in Italy. In conclusion Dr. Lavalle pointed out that the challenge for the future is to utilize devices which are capable to defibrillate and if necessary to pace without touching the earth.

Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure



Need for pacing or antitachycardia pacing with S-ICD



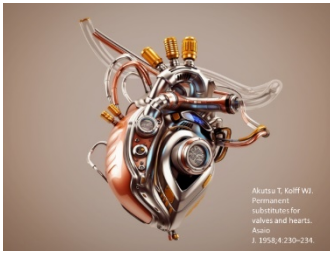
- What are the true pacing needs for patients?
- What are the benefits and the disadvantages of the subcutaneous ICD?
- What's about the infection and the mortality rate in patients with ICDs?
- What are the main lead related complications?
- What are main ICD complications?
- What are the main problems linked with the patients' selection?

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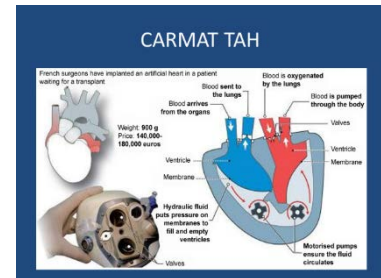
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Mechanical therapy

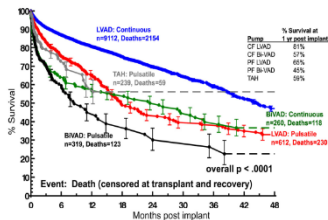


Alkutu T. Koffi WJ.
Permanent substitutes for valves and hearts.
Acta J. 1958;4:230-234.

The Mechanical therapy was the topic Dr. Miraldi talked about. The speaker coming from Rome (IT), presented very interesting data on the devices affordable for the implantation at the hearth level. More in particular Dr. Miraldo spoke about Jarvik 2000 LVAD, an axial-flow non-pulsatile pump running at speed between 8000-12000 rpm and other devices like ventricular artificial heart and total artificial heart



Intermeds Implants: June 2006 – December 2013, n = 10542



like SynCardia, AbioCor and Carmat. In the main part of his talk, the speaker presented data on the adverse events related to these devices and on the patient selection for the device implantation. In conclusion, Dr. Miraldi pointed out that in the future artificial heart will be not as a bridge to transplantation but as a life extending device.

- What's about the patient selection for artificial heart implantation?
- What's about the survival of implanted patients from 2006 to 2013?
- What are the main characteristics of CARMAT TAH?
- What are the main adverse events attributable to the implantation of SynCardia TAH?
- What's about the first ventricular artificial heart implanted by Dr. De Vries in 1982?

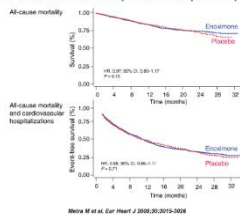
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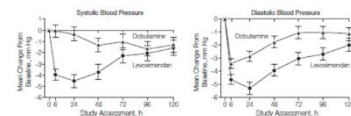
Pharmacological therapy: new inotropes

Kaplan-Meier estimates of the time to the safety endpoint of death (up) and to the primary endpoint of death or cardiovascular hospitalization (bottom).



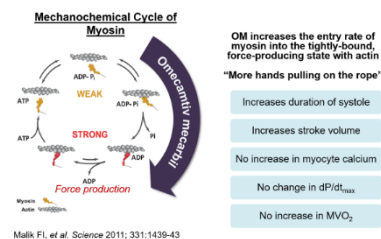
Prof. Metra, talked about the new inotropes in the context of the pharmacological treatment of HF patients. The speaker coming from Brescia (IT) presented a huge amount of data on the sympathomimetic agents, the PDE-3 inhibitors, Levosimendan, the SERCA activators like istaroxime, the Myosin activators like omecamtiv mecarbil, the Mitochondrial targeted peptides like elamipretide and finally on the Recombinant neuregulin. Prof. Metra discussed in deep the main data produced by the major clinical trials performed with these new drugs, by highlighting the

Blood pressure changes in SURVIVE



Mebazaa et al. JAMA 2007; 297:1883-91

Omecamtiv mecarbil: A small molecule selective cardiac myosin activator



presence of more adverse events than benefits with the exception of omecamtiv mecarbil and elamipretide that respectively showed in their first trials a positive effect in HF patients. In conclusion, Prof. Metra pointed out that the sympathomimetic agents and the PDE-3 inhibitors presented harmful effects on long-term survival and there is need of more studies with levosimendan at non-hypotensive doses and with long-term intermittent administration.

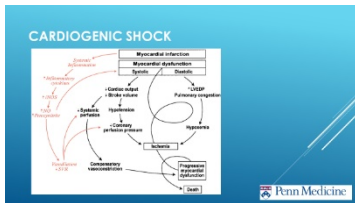
- What are the key points of the therapeutic algorithm for a patient with symptomatic HFrEF presented by the speaker?
- What's about the new inotropes for the treatment of advanced HF?
- What's wrong with inotropic therapy in heart failure?
- What are the effects of dobutamine and levosimendan on 180 days mortality?
- What are the main results of Levosimendan in mortality in the REVIVE program?
- What are the main effects of Omecamtiv mecarbil based on the data presented by the speaker?
- What's about the HNO hemodynamic?
- What are the effects of Elamipretide on plasma neurohormones?
- What is the mechanism of action of the Recombinant human neuregulin-1β?

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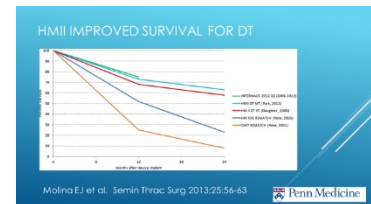
Hemodynamic support and LVAD



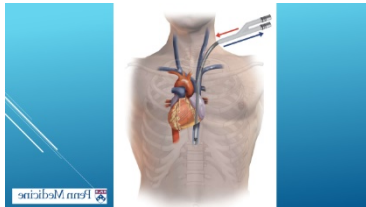
Hemodynamic support and LVAD was the topic at the core of Prof. Mather presentation. The speaker coming from Philadelphia (USA), at the beginning of talk spoke about cardiogenic shock and its in-hospital mortality despite the pharmacological therapy. Going deeper in his talk Prof. Mather

presented very interesting

data on IABP that is the intra-aortic balloon pump, on IMPELLA, TANDEM



HEART, HMII LVAD and other implantable LVADs and finally on SYNCARDIA TAH, the total artificial heart and VA and VV ECMO. In conclusion, the speaker pointed out that despite the presence of many tools, cardiogenic shock actually remains a major problem in HF patients and their mortality rate is still very high.



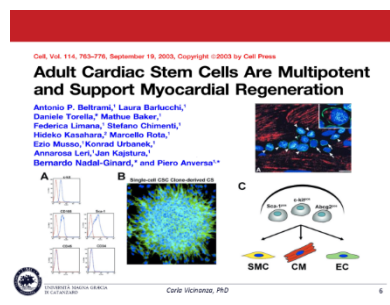
- What's about in-hospital mortality based on the data presented by the speaker?
- What's about IABP mortality rate presented by the speaker?
- What are the main characteristics of 2.5 and 5.0 IMPELLA?
- What are the main characteristics of HMII LVAD presented by the speaker?
- What are the main differences between VA and VV ECMO presented by the speaker?

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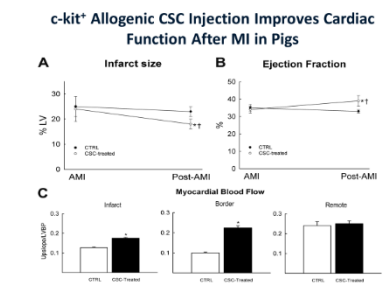
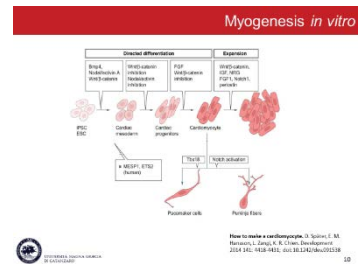
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Stem cells and cardiac regeneration



Stem cells and cardiac regeneration was the topic presented by Prof. Torella. The speaker coming from Catanzaro (IT), presented very interesting data on the adult heart and its stem cells with their multipotent regenerative capacities. In the main part of his lecture Prof. Torella presented unpublished data in order to find a comprehensive answer to a key question about the true identity of the cardiac stem cells. In the second part of his presentation, the speaker talked about CSCs and their regenerative effects proved after their injection in pigs. In conclusion, Prof. Torella pointed out that the adult heart has a significant repair/regeneration capacity if tested with proper controls and under proper conditions and that the existence of a regenerative endogenous agent, the so called “c-kit^{pos}”, changes the current view of the biology of the adult heart.



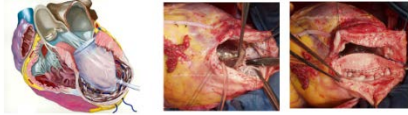
- What is the main effect of the c-kit⁺ allogenic CSC injection on the heart function?
- What's about the increased cardiogenesis after c-kit⁺ allogenic porcine CSC injection?
- What's about the fostering of the regenerative capacity of the adult heart in AMI?

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Surgical treatment of heart failure: the past, present and future

LV RESTORATION

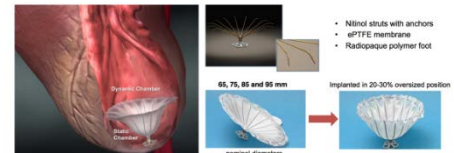
- Arrested heart
- Use of intraventricular mannequin to re-size and re-shape
- Complete coronary revascularization
- Cryosurgery (or endocardial resection) at the border of the lesion when VA present



Prof. Alfieri talked about the past, the present and the future of the surgical treatment of Heart Failure. The speaker coming from Milan (IT), presented very interesting data starting from the epidemiology of heart failure and the main characteristics of one of its major clinical manifestations, the ischemic cardiomyopathy. In the main part of his lecture,

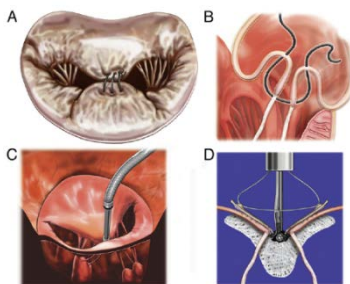
Prof. Alfieri spoke about the surgical procedures to be applied for the left ventricular restoration and on Bio Ventrix and Parachute, new devices able to produce a similar effect on the ventricle. The speaker presented very interesting data on the procedures to be applied in the presence of mitral regurgitation for its repair or replacement and more in particular on

Parachute



MitraClip therapy and on transcatheter annuloplasty procedures. In the second part of his lecture, Prof. Alfieri spoke about the cardiac surgery procedures applied in patients with atrial fibrillation and on the assist devices used in the same types of patients, by presenting very interesting data given by guidelines and randomized trials. In conclusion, the speaker pointed out that there are other devices in development to be applied in the left ventricular restoration and in the mechanical circulatory support.

Mitra Clip



- What is the Kaplan-Meier survival curve after heartware implantation presented by the speaker?
- What's about the ESC guidelines on Assist devices for the diagnosis and the treatment of acute and chronic heart failure?
- What are the numbers of heart transplants reported by year presented by the speaker?
- How does Cardioband work?
- What are the main procedures to be applied in the transcatheter annuloplasty?

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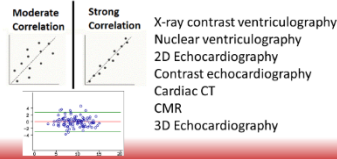
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Left ventricular function evaluation

LV EF

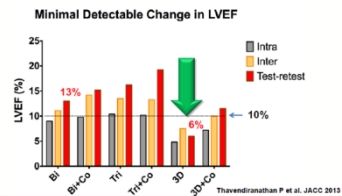
- the current standard for LV systolic function
- SV/LV end-diastolic volume
- conceptually a simple parameter
- **multiple methods** to derive the same calculation:



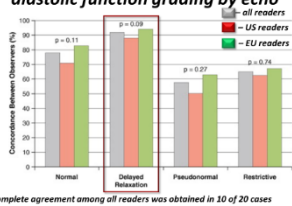
performance in LV hypertrophic patients, about 2D and 3 D measurements and finally on the LV diastolic function estimation. Going deeper in her lecture, the speaker presented a huge amount of echo data on all the above topics with the aim

Left ventricular function evaluation was the topic Dr. Dulgheru talked about. The speaker coming from Liegi (BE), presented very interesting data on all the major points linked with the echo left ventricular evaluation. More in particular Dr. Dulgheru talked about LVEF as a LV systolic function parameter, about deformation parameters to be used for the assessment of the LV systolic

3D techniques have less test-retest variation



Limited concordance between observers for diastolic function grading by echo



Complete agreement among all readers was obtained in 10 of 20 cases

Unzek et al. JACC Imaging 2011

to discuss all the available techniques and the related problems. In the second part of her talk, the speaker presented data on all the other echo techniques available like CMR, cardiac CT and 3D Echocardiography. Finally, Dr. Dulghero spoke about the evaluation of the LV diastolic function, by presenting very interesting algorithms on the echo procedures to be applied for LV diastolic measurements. In conclusion, the speaker pointed out that LVEF still plays a central role in the identification and

management of HF patients.

- What's about the limited concordance between observers for diastolic function grading by echo?
- What is the patients' acceptability of the main echocardiographic methods?
- What is the main advantage of the 3D techniques in comparison with the 2D ones from the speaker point of view?
- What are the key topics for the selection of the right tool from the speaker point of view?
- What are the main limitations of LVEF measurements from the speaker point of view?

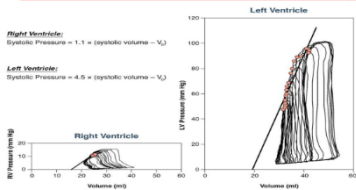
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Right ventricular function

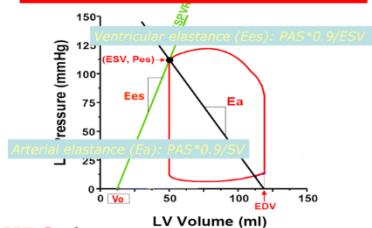
Right ventricular (RV) systolic volumes change more dramatically with a change in right ventricular pressure as compared with left ventricle (LV)



UPO Fumachi K and Popovic ZB. JACC Imaging 2016

very interesting data on the

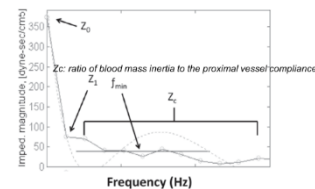
Ventricular and vascular elastances



UPO Chen CH et al. J Am Coll Cardiol 2001. Suga H, Physiol Rev 1990

Right ventricular function was the topic at the core of Prof. Marino presentation. The speaker coming from Novara (IT), at the beginning of his presentation highlighted that the RV systolic volumes change more dramatically as compared with left ventricle and in order to go deeper in the comprehension of the right ventricular function, he presented very interesting data on the arterial impedance spectra and the ventricular and vascular elastances. In the main part of his lecture, Prof. Marino presented data on the RV volumes at coupled and uncoupled stage in pulmonary hypertension and on the mean pulmonary artery pressure in relationship with the tricuspid annular plane systolic excursion in patients respectively affected by HFrEF and HFpEF, by highlighting that when RV and pulmonary vasculature are uncoupled the EF steeply declines.

Arterial impedance spectra after Fourier transformation



Tedford RJ, Pulm Circ 2014

- What's about the Ventricular-vascular coupling Components of the external load?
- What are the Arterial impedance spectra after Fourier transformation?
- How to measure the Arterial impedance?
- What's about the Right ventricular function and its load?
- What are the main characteristics of the ventricular and vascular elastances?

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Strategies to assess valve involvement

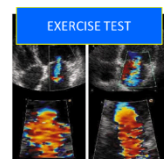
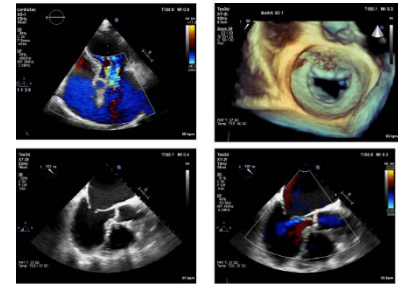


**PARADOXICAL
LOW-FLOW
AORTIC STENOSIS
WITH NORMAL
EJECTION
FRACTION**

Stroke Volume # Ejection Fraction

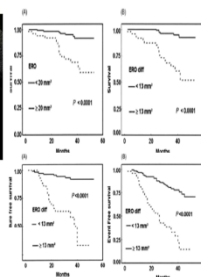
Prof. La Canna spoke about the strategies to assess the valve involvement in the Heart Failure context. The speaker coming from Milan (IT), presented very interesting data on the clinical assessment of the valvular heart disease in CHF patients. More in particular Prof. La Canna spoke about the low gradient-aortic

stenosis and on the test with dobutamine for a better evaluation of the LV contractile reserve. The speaker talked also about the aortic valve reserve and the mitral valve involvement in CHF, by presenting very interesting imaging data given by clinical cases.



EXERCISE TEST

Long-term outcome of patients with heart failure and dynamic functional mitral regurgitation
Lancellotti P et al *E Heart J* 2005
161 pts EF<45% mild MR
no inducible myocardial ischemia



In the second part of his presentation, Prof. La Canna spoke about the functional/ischemic mitral regurgitation, by presenting very interesting imaging data performed with the main available echo techniques. Finally, the speaker presented other imaging data on the myocardial ischemic mitral insufficiency. In conclusion, Prof. La Canna pointed out that imaging plays a crucial role in valve assessment of CHF patients.

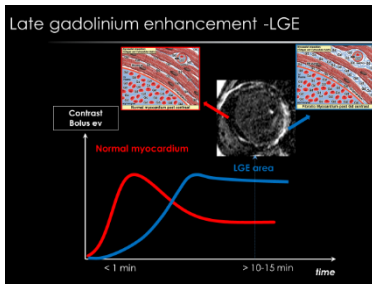
- What are the main methods of detection of VHD in CHF patients?
- What's about Low Gradient-Aortic Stenosis as a clinical dilemma from the speaker point of view?
- What is the responsibility of the aortic stenosis for the symptoms' development in patients with severe comorbidity?
- What are the main Mitral valve involvement in CHF presented by the speaker?
- What's about Trendelenburg Echo?

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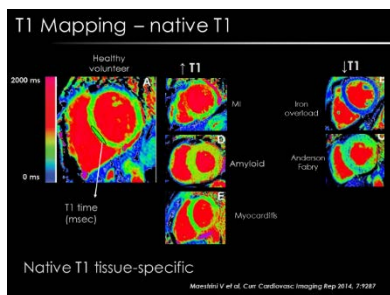
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Fibrosis in non-ischemic cardiac diseases

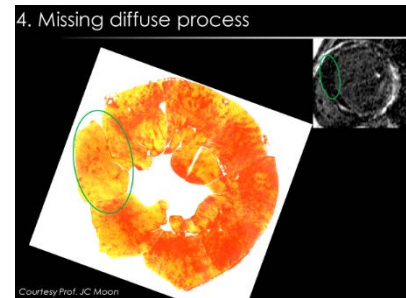


main characteristics and its limitations in detecting diffuse fibrosis. In the second part of her presentation Dr. Maestrini talked about T1 mapping as a new technique potentially able to detect fibrosis. Finally, the

speaker talked about T1



mapping validation, accuracy and precision. In conclusion, Dr. Maestrini pointed out that LGE allows non-invasive tissue characterization for prognostic and diagnostic purposes, but with some limitations and that T1 mapping has the potential to address some of these limitations.



- What are the main characteristics of CMR LGE presented by the speaker?
- What's about the LGE ischemic and non-ischemic pattern?
- What's about the LGE limits presented by the speaker?
- What are the main characteristics of T1 mapping from the speaker point of view?

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Viable versus non-viable myocardium

ESC Guidelines for revascularization 2014

Revascularization in patients with chronic heart failure and significant LV dysfunction (Objective Position - 37%)

Recommendation	Class	Level	Grade
CABG is recommended for patients with significant CAD, chronic heart failure, and preserved LVEF to improve morbidity and mortality.	I	A	11,12B
CABG is recommended for patients with significant CAD, chronic heart failure, and preserved LVEF to improve morbidity and mortality.	IIa	A	11,12B
CABG is recommended for patients with significant CAD, chronic heart failure, and preserved LVEF to improve morbidity and mortality.	IIb	B	11,12B
PCI is recommended for patients with significant CAD, chronic heart failure, and preserved LVEF to improve morbidity and mortality.	III	C	11,12B

11.1 Revascularization
 Revascularization with CABG or PCI is indicated for symptomatic heart failure patients with heart failure. The prognostic importance of surgical revascularization in patients with chronic heart failure has recently been established in the STICH trial, with the aim of comparing the efficacy of initial medical therapy with that of revascularization by CABG plus medical therapy in a subset of 1112 patients with CAD and LV dysfunction (EF < 35%).

L'Ag

Viable versus non-viable myocardium was the topic at the core of Dr. Cimino talk. The speaker coming from Rome (IT), presented very interesting data on viable myocardium, its therapeutic strategies, like revascularization, medical therapies and non-pharmacological approaches. Going deeper in her talk, Dr.

Cimino presented data given by the STICH trial, by highlighting that in patients with CAD and LV dysfunction the assessment of myocardial viability did not identify those one with the

STICH
 Myocardial Viability and Survival in Ischemic Left Ventricular Dysfunction

Robert D. White, MD

Myocardial Viability and Mortality

Figure 1: Kaplan-Meier survival plot showing overall survival for CABG (n=552) and Medical Therapy (n=560) groups. CABG shows significantly better survival (p < 0.001).

Figure 2: Flowchart of patient selection for the STICH trial, showing the inclusion of patients with CAD and LV dysfunction (EF < 35%) and the exclusion of those with non-viable myocardium.

In patients with CAD and LV dysfunction, assessment of myocardial viability does not identify patients who will have the greatest survival benefit from adding CABG to aggressive medical therapy.

L'Ag

greatest survival benefit from adding GABG to aggressive medical therapy. In the second part of her speech, Dr. Cimino talked about the methods able to detect signs of myocardial ischemia in DCM patients. In conclusion, the speaker pointed out that despite the presence of multiple imaging modalities, randomized trials designed for the detection of the viability processes in the myocardium are lacking.

Impact of ischemia and scar on the therapeutic benefit derived from myocardial revascularization vs. medical therapy among patients undergoing stress-rest myocardial perfusion scintigraphy

Benjamin J. W. et al. (2011)

Pts with a reduced scar burden (defined as <10% of the myocardium) had a survival benefit from early revascularization. This was in contradistinction with those pts who had ischemia with a large scar burden (>10%), for whom a benefit in revascularization was not observed.

L'Ag

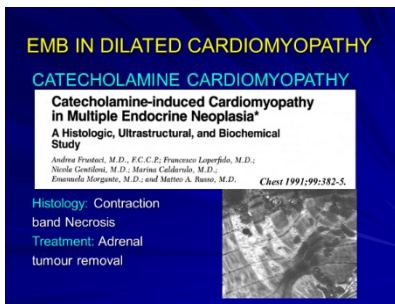
- **What are the main characteristics of the viable myocardium?**
- **What's about the STICH trial based on the data presented by the speaker?**
- **What are the main characteristics of the ischemic DCM?**
- **What are the imaging techniques able to detect the hibernating myocardium?**

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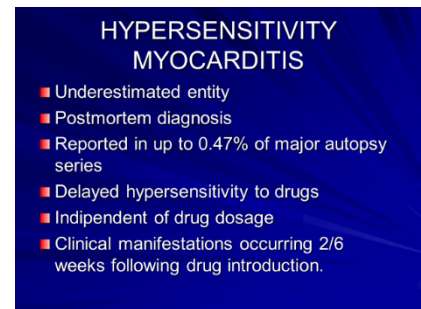
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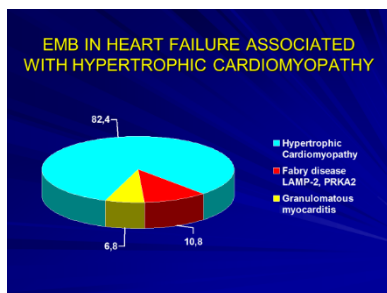
Endomyocardial biopsy



Prof. Frustaci talked about the endomyocardial biopsy. The speaker coming from Rome (IT), presented very interesting data on the contributions of EMB in the diagnosis of dilated cardiomyopathy, hypertrophic cardiomyopathy and restrictive cardiomyopathy. Prof. Frustaci spoke also about the use of EMB in Cushing Syndrome CM,



by presenting data on its pathogenesis and its translational impact. The speaker presented also data on oxidative myocardial damage in human cocaine-related cardiomyopathy,



on myocarditis mimicking DCM, like hypersensitivity myocarditis and others. In the last part of his lecture, Prof. Frustaci presented data given by a randomized trial performed in his center on the efficacy of immunotherapy in patients with virus-negative inflammatory cardiomyopathy. In conclusion, the speaker pointed out that EMB may give a high contribute in the diagnosis and treatment of heart failure of doubt origin.

- What's about the detection of myocardial tumoral lesions?
- What's about the application of EMB in the diagnosis of eosinophilic endomyocardial disease?
- What are the main applications of EMB techniques in HF patients with restrictive cardiomyopathy?
- What are the main contributions of EMB application from the speaker point of view?
- What are the main Endocrine Disorders associated with DCM available for the EMB application?

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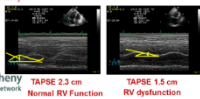
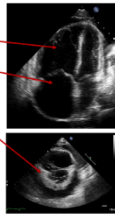
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Heart failure between clinical evaluation and multimodality imaging

RV Assessment on Echo

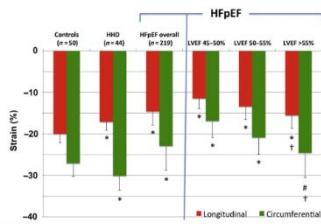
- RV enlargement
- RA enlargement
- Septal straightening
- Loss of IVC inspiratory collapse
- Tricuspid regurgitation
- Pericardial effusion
- Decreased RV systolic dysfunction



Allegghery Health Network
TAPSE 2.3 cm Normal RV Function
TAPSE 1.5 cm RV dysfunction
McLaughlin, VV et al. J Am Coll Cardiol. 2008;51:1273-1279 Page 15

available for the HF diagnosis. More in particular the speaker talked about the role of multi-modality imaging in HF from a

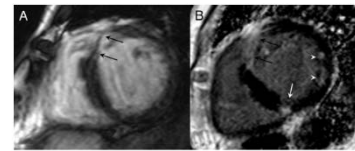
Strain Imaging



Allegghery Health Network
Seminth OA et al. EHJ 2016; 37: 1136 Page 14

Heart failure between clinical evaluation and multimodality imaging was the topic at the core of Prof. Murali presentation. The speaker coming from Pittsburgh (USA), presented very interesting data on

CMR in Cardiac Sarcoidosis



Allegghery Health Network
Karamitsos TD et al. JACC 2008;51:1407-1424 Page 17

recommendations guidelines for the diagnosis and treatment of heart failure and on the imaging modalities available for the HF diagnosis. More in particular the speaker talked about the role of multi-modality imaging in HF from a diagnostic, etiologic, prognostic and response to treatment point of view. Prof. Murali presented data on all the main imaging techniques applicable in HF patients like echocardiography, CMR, LGE, multimodality Imaging, Strain Imaging, scintigraphy and their principal applications. In conclusion, the speaker pointed out that multi-modality imaging has a major role in HF management with a concrete impact on therapy.

- What are the main applications of Strain imaging?
- What's about the application of CMR in HFpEF patients with endomyocardial fibrosis?
- What's about the application of CMR in cardiac sarcoidosis and in hypertrophic cardiomyopathy?
- What are the main characteristics of LGE presented by the speaker?
- What are the main characteristics of RV strain presented by the speaker?
- What is the prognostic relevance of RV FAC?
- What are the main pathological RV indices detected with the Echo techniques?

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